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FSHD Global Research Foundation
Annual Report 2020

Company Name :
FSHD Global Research
Foundation Ltd

Company Address :
PO Box A296, Sydney South,
NSW, 1235, Australia
+61 (2) 8007 7037

FSHD
Global Research
Foundation Ltd

Welcome to the FSHD Global Research Foundation Annual Report

Our Highlights

Multi-award winning Charity

Winner of Outstanding Achievement in the Australian Charity Awards 2020, 2019 and 2018 Winner of the Charity of the Year in 2017.

$0 remuneration

Our Board of Directors, Science Advisory Boards, Patrons and Ambassadors receive $0 remuneration

Ongoing Medical Research grants

51 ongoing Medical Research grants into Basic, Diagnostic, Therapeutic and Biotech research areas

100% of all cash tax deductible donations

With the onset of COVID-19 our proud record of allocating 100% of tax deductible donations to medical research has reduced to 90%

$18 million in 12 years

FSHD Global has raised over $18 million in 12 years funding medical research in 10 countries

FSHD educational toolkits

FSHD Global launched Australia's first FSHD educational toolkits for patients, GP's and allied health groups to better understand the impact of living with FSHD

Largest contributors to FSHD medical research

We remain one of the largest contributors to FSHD medical research worldwide

FSHD Medical Education Portal

The FSHD Medical Education Portal is a 'one stop shop' for people living with FSHD. This platform provides education on advancements in the disease, access to clinical trial readiness programs and the Australian FSHD Registry.

Table of Content

FSHD Global Research Foundation

PO Box A296, Sydney South,
NSW, 1235, Australia

+61 (2) 8007 7037

Our Story

The FSHD Global Research Foundation was established in 2007 by Australian businessman, philanthropist and sufferer of FSHD, Bill Moss AO.

Our mission is to find a cure for Facioscapulohumeral muscular dystrophy (FSHD) within five years. A disease that affects an estimated one million people globally. It is caused by an overexpression of a protein called DUX4, which is toxic to muscle.

The true prevalence of this disease is still unknown. Due to poor diagnostics and misdiagnosis, many people live unaware they carry the genetic gene, at risk of passing down generations.

The Foundation's aim is to increase awareness and fund national and international researchers to undertake both clinical and basic research projects that can lead to identifying the cause and a future cure for FSHD. We also aim to increase the knowledge and awareness of FSHD among medical practitioners, researchers, patients, donors and the general community.

FSHD Global invests directly into well managed Biotechs that have a major focus on technology which has a prospect of leading to clinical trials in patients with any muscular dystrophy that can:

- Grow muscle cells in human tissue
- Improve muscle wellness
- Develop wearable technology to assist in movement

Until 2020 and the challenges of COVID-19, FSHD proudly allocated 100% of all tax deductible cash donations to current and future medical research grants, investment and education, whilst the Foundation's operations are supported by non-tax deductible sponsorships. We hope to return to this proud point in 2021. With no government funding or support, our unique operating model continues to offer great transparency and accountability in allowing us to continue to fulfil our mission.

Values

Transparency and Accountability

We are clear and open about where your money goes, how we make decisions and how we run the Foundation. We take responsibility for our actions and openly communicate with our donors and sponsors.

Community

We are committed to staying close to our community of people living with FSHD and their friends and families to ensure our research is in their interest. We leverage their skills, knowledge, experience and networks to advance closer to achieving our mission.

Experimentation and Innovation

We encourage new approaches to solving problems and look beyond the boundaries of traditional disciplines and areas of specialty.

Passion

We are a family Foundation directly impacted by the disease, with a relentless drive to find a cure as quickly as possible.

Message from the Chairman

Bill Moss AO

Founder and Chairman
FSHD Global Research Foundation

Dear Friends,

Over the past 12 months, the FSHD Global Research Foundation has focused on its mission to find a cure for Facioscapulohumeral muscular dystrophy (FSHD) and increase muscle wellness and muscle technology.

Despite the challenges with the onset of COVID-19, the Foundation successfully pivoted to adopt a digital fundraising platform, streamlined operations and continued to implement its scientific strategy.

Like all charities, the COVID-19 pandemic had a dramatic effect on the Foundation's income, with our major annual fundraising initiative 'The Sydney Chocolate Ball' being cancelled. Traditionally this event has been responsible for revenue in excess of $1M.

The new digital fundraising platform which incorporated a new customer relationship management software propelled FSHD Global into a new era of digital fundraising which successfully launched the 'Sydney Chocolate Ball Goes Digital' campaign, 'Double your Donation' campaign and established the inaugural flagship 'Muscles for Muscles' campaign.

As a result of these initiatives the COVID-19 effect was mitigated with a decrease of 17% in donations for 2020.

Unfortunately our record of 100% of all tax deductible donations contributing to medical research and education decreased to 90% during the financial year.

During the past year the Foundation continued to fund 9 national and international research projects. Key research projects included; targeting and correcting FSHD sequences in the human genome through CRISPR inhibition therapy, DNA cell characterization sequencing, and development of therapies towards clinical trials by Facio Therapies, a FSHD biotech.

In addition we built the FSHD Medical Education Portal, a digital platform to help educate individuals and their families living with FSHD on new and improved diagnostic technologies, share global research publications and connect people with professional health services. This Portal will actively keep our community informed on current and proposed FSHD clinical trials.

During September 2020 I stepped down as the Chairman of the FSHD Global Research Foundation, after 13 years. As my replacement the Board nominated Natalie Cooney as Chairperson. I will continue to be actively involved in the Foundation, particularly focusing on strategy and science initiatives. I will remain as a Board Director, and become Patron of FSHD Global.

I would like to thank all the staff, board directors, donors, volunteers and corporate sponsors who over the past 12 years have made this Foundation a truly unique and successful charity.

Regards
Bill Moss AO
Chairman and Founder

Contact Us

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Our Journey

11
MILLION

FSHD Global Research Foundation has successfully raised over $11 million dollars in tax deductible donations.

12
YEARS

Founded in 2007, we have achieved this result in just 12 years.

2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

10
COUNTRIES

This money has helped fund 51 world class medical research grants in 10 countries around the globe.

We continue to receive no government support or funding

Message from the Chief Executive Officer

Danielle Thomson

Chief Executive Officer
FSHD Global Research Foundation

2020 has been nothing short of challenging, unprecedented and extraordinary. As a result of COVID-19, we saw the cancellation of our blue ribbon major fundraiser – the Sydney Chocolate Ball which essentially provides funding not only for medical research but our annual operational and fundraising costs.

Whilst most of the world paused its operations, FSHD Global set out to revise its operational and fundraising strategy by delivering virtual campaigns and streamlining operations. With the loss of the Sydney Chocolate Ball and challenging economy, our financial results were positive.

We still continue to deliver on our mission to fund medical research to find a cure for FSHD, and invest in muscle wellness and muscle technology - assisting all people who are affected by all muscle weakness disorders.

Our success relies heavily on the support of our generous sponsors, supporters, community and team to continue to believe in our vision, our mission, our purpose and passion in providing much needed funding as we pave the way towards clinical trials for this debilitating disease.

Thank you to our community and sponsors who continued to support FSHD Global this year by way of monetary donations or the donation of goods and services, which enabled us to deliver our successful virtual fundraising campaigns.

The future remains bright for FSHD Global and I look forward to working with our strong, committed and long standing supporters and community, as we work together to achieve new benchmarks in raising funds and creating awareness of the Foundation's work.

Contact Us

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FSHD Global Research Foundation

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What is FSHD?
Facioscapulohumeral Muscular Dystrophy

Facioscapulohumeral muscular dystrophy (FSHD) is a highly complex and progressive muscle wasting disease causing weakening and loss of skeletal aof muscular dystrophy in adults and children. Often referred to as a ‘slow death’ disease, it is aggressive and does not discriminate, affecting young and old from all ethnic groups.

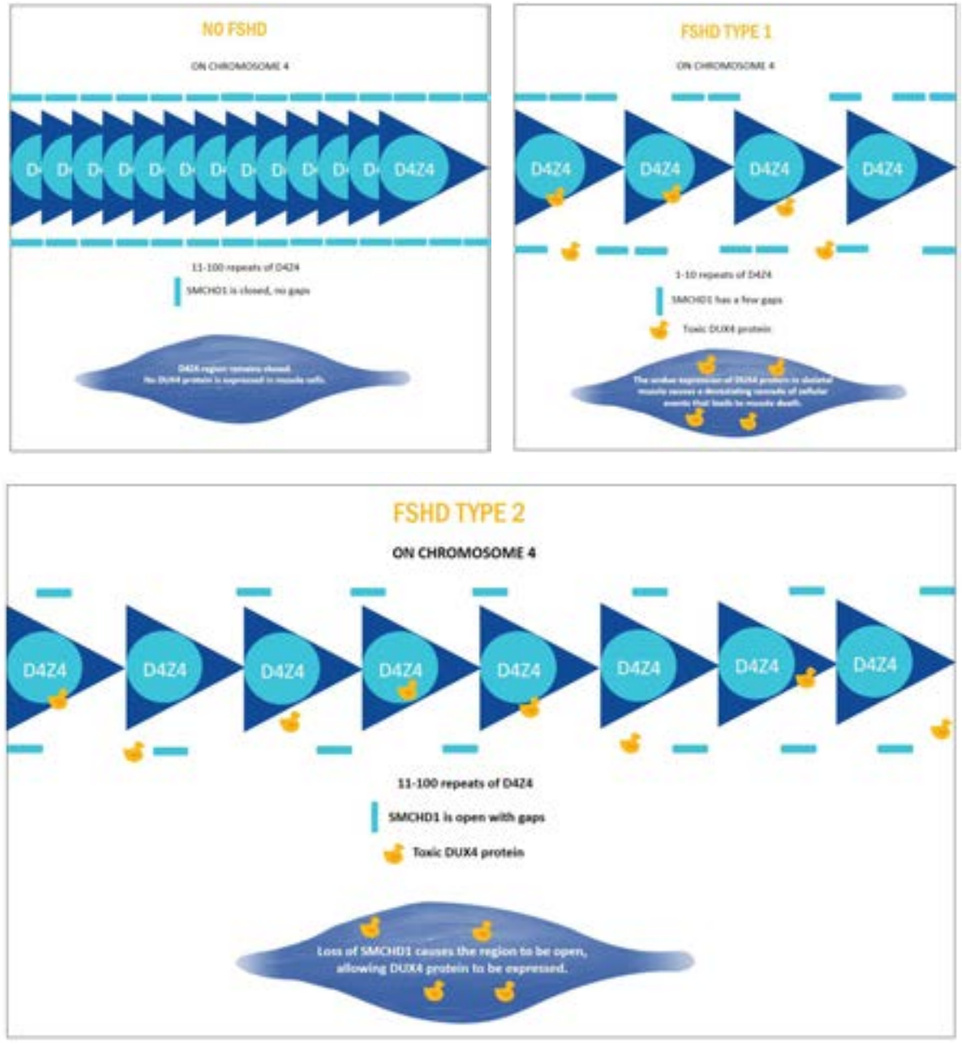
The Global footprint of this disease is enormous, with an estimated 1 million people living with FSHD.

FSHD is commonly associated with progressive weakening of facial, shoulder and upper arm muscles. However, this explanation does little justice to a disease that can rob people of their ability to walk, talk, smile or even eat. The progression often comes in bursts with sudden deterioration followed by periods of no change.

The loss of skeletal muscle has a huge impact on daily life making even simple tasks complicated. Living with FSHD means living with pain, fatigue and the social isolation that comes from being reliant on mobility aids. The future for someone with FSHD is uncertain because there is so much variability in how FSHD manifests in people.

People with FSHD live with no known cure and few treatments currently available. The FSHD Global Research Foundation is working to change this and gives hope to those living with this disease that something is being done to fight for a cure.

There are more than 30 muscular dystrophies currently known and FSHD is thought to be one of the most common affecting both adults and children and is arguably one of the most complex.



BUILDING MUSCLES FOR THOSE WHO CAN'T!

The FSHD Global Research Foundation will launch their 2021 “Muscles for Muscles” campaign on 1 May 2021. The aim of this campaign is to drive awareness, empathy and support towards finding treatments and a cure for FSHD muscular dystrophy. As a genetic disease, FSHD affects people of all ages, religion, sex and body type. It does not discriminate, and neither does this campaign!

Muscles for Muscles encourages people of all fitness levels to partake in building their muscles for those who simply can’t. It also gives people living with this debilitating disease an opportunity to invite their friends and loved ones to compete on their behalf and raise awareness around the importance of having functional muscle and movement. This challenge is bigger than just fundraising, it is personal to the one million people and their families living with FSHD.

Learn more by visiting
https://fshdglobal.org/muscles-4-muscles/

About the Foundation

The FSHD Global Research Foundation focuses on finding treatments and a cure for FSHD. In doing so, we fund world-class medical research, awareness and education. We are also committed to complete transparency and accountability in our operations.

The Foundation was established in 2007 by Bill Moss AO, a well-known Australian businessman and philanthropist who lives with FSHD. Since then, we have been addressing the chronic lack of medical funding and awareness of FSHD, both in Australia and globally.

The true prevalence of this disease is still unknown. Due to poor diagnostics and misdiagnosis, many people live unaware they carry the genetic gene, at risk of passing down generations.

The Foundation undertakes a wide range of medical research focused on; slowing this disease, muscle wellness and muscle technology. The aim of this research is not only to find a cure for FSHD, but to find ways that all people suffering from muscle weakness caused by neuromuscular disorders, muscle trauma and ageing will benefit.

Since 2007, the Foundation has committed over $11 million to fund 51 ongoing medical research grants in 10 countries; the USA, Canada, the Netherlands, Israel, Italy, France, Belgium, Spain, New Zealand and Australia.

Until 2020 and the challenges of COVID-19, FSHD Global proudly allocated 100% of all tax deductible cash donations to current and future medical research grants, investment and education, whilst the Foundation’s operations are supported by non-tax deductible sponsorships. We hope to return to this proud point in 2021.

FSHD Global has always been an innovator and a disruptor. The Foundation has launched another innovative milestone for the field of FSHD with the new FSHD Medical Education Portal. This Portal will bridge the gap from archaic diagnostic methods which commonly causes misdiagnoses, and will provide education, assistance and knowledge to people and their families in their own home.

With no government support the main sources of our funding for FSHD research are individuals afflicted by FSHD, their friends, supporters, as well as corporate sponsors. All funds donated are invested through careful consideration, guided by our Scientific Advisory Boards, Board of Directors and International Research Committees, ensuring FSHD Global remains a leader in discovering world’s best science.

>>>

Meet Our
Patrons, Ambassadors and State Branch Presidents

Our dedicated and passionate Patrons, Ambassadors and State Branch Presidents across Australia are vital to our success in growing awareness and funding for our work. We extend our heartfelt thanks for their generous contributions and time.

Patrons

Jamie Durie OAM

Justin Reid

Luke Mangan OAM

Prof. John Rasko AO
Patron of Science

Ambassadors

Ben Schultz

Charlotte Caslick

Emma Weatherley

Julie Wood

Kerry-Anne Johnston

Lewis Holland

Paul Gallen

Rochelle Collis

Danny Chronopoulos

Carol Major

Phil Harding

Kerry Armstrong

Jodie Thorne

State Branch Presidents

Claire Anderson
Western Australia President

Leona Luke
Queensland President

Les Jones
Victoria President

Tania Spagnolini
New South Wales President

Meet Our
Board of Directors

The Foundation relies on the generosity, time and expertise of our community to continue to excel in our mission for a cure. We are fortunate to have an incredible support network made possible by our non-remunerated Board of Directors, Science Sub-Committees, Patrons, Ambassadors, Staff and Volunteers who each offer vast experience in their respective fields to support our quest for a cure.

Bill Moss AO
Chairman 2007 - 2020

Natalie Cooney
Managing Director - Chairperson elect

Nigel Virgo
Deputy Chairman

Natalie Pidgeon
Director

Shaun McMenamin
Director

Andrew Rigney
Director

Ross Nicholas
Alternate Director

Barry Robinson
Director

Bechara Shamieh
Director

David Mackay
Director

Glenn Willis
Director

Malcolm Beville
Director

Pete Ratcliffe
Director

Scott Baker
Director

Bev Baker
Alternate Director

Thank you to departing Directors of 2020 who have provided their time, expertise and commitment to FSHD Global. We acknowledge Alan Watts, Andrew Frost, Anne Paton, Pete Ratcliffe and Pradnya Dugal.

AT THE EDGE OF RESEARCH

In a short period of time, the Foundation has successfully generated 51 medical research grants across 10 countries, funding all types of research to help drive discoveries that may lead to effective treatments and an ultimate cure for people living with FSHD.

With clinical trial readiness around the corner we need your help to fast track treatments and increase the quality of life for those living with FSHD.

OUR FOCUS

Our mission is to find a cure for Facioscapulohumeral muscular dystrophy (FSHD). A disease that affects an estimated one million people globally. It is caused by an overexpression of a protein called DUX4, which is toxic to muscle.

The true prevalence of this disease is still unknown. Due to poor diagnostics and misdiagnosis, many people live unaware they carry the genetic gene, at risk of passing down generations.

The Foundation undertakes a wide range of medical research focused on; slowing this disease, muscle wellness and muscle technology. The aim of this research is not only to find a cure for FSHD, but to find ways that all people suffering from muscle weakness caused by neuromuscular disorders, muscle trauma and ageing will benefit.

FSHD GLOBAL FUNDING PILLARS

FSHD GLOBAL RESEARCH FOUNDATION FUNDS

A CURE FOR FSHD

Research projects that are focused on developing treatments to treat the underlying cause of FSHD progression.

MUSCLE WELLNESS

Research projects that are focused on developing treatments to improve musculoskeletal health, strength and wellbeing.

MUSCLE TECHNOLOGY

Research projects that are focused on developing technologies to improve muscle movement and replace or repair damaged tissues.

OUR JOURNEY TO A CURE

Finding a cure for FSHD has been a long and complex process. It was necessary to unlock the mechanism for the disease, understand the cell biology, and commence the long journey towards drug development.

Along the way, we also had to focus on human FSHD cells and tissue, biomarkers, diagnostics and prepare for clinical trial readiness.

The future strategy for this Foundation is to encourage clinical development of many novel medicinal compounds which can be used in clinical trials to stop this disease.

In parallel with this strategy we are working on ways to increase muscle wellness to keep peoples' muscles healthier until a cure is available, and encourage research into futuristic combinations of robotics & artificial intelligence that will be able to help people regain mobility after a lifetime of muscle deterioration.

FSHD MEDICAL EDUCATION PORTAL

FSHD Global has always been an innovator and a disruptor. This year, the Foundation has launched another innovative milestone for the field of FSHD with the new FSHD Medical Education Portal. This Portal will bridge the gap from archaic diagnostic methods which commonly causes misdiagnoses, and will provide education, assistance and knowledge to people and their families in their own home.

This Portal centres on establishing a FSHD Registry, collating information on disease evolution and connecting our community with diagnostic platforms and furthermore clinical trial readiness programs.

Members of the Portal will be encouraged to participate in the FSHD Saliva Research Test to better understand their own DNA sequencing relating to FSHD, which is complimentary and available worldwide.

FSHD MEDICAL EDUCATION PORTAL

FSHD Global Research Foundation funds the world's best medical research into Facioscapulohumeral muscular dystrophy.

As we work towards finding treatments and a cure, the FSHD Medical and Education Portal focuses on encouraging our community to join the FSHD Global Registry, and furthermore connects people living with FSHD to medical research institutions and biotechs researching and/or recruiting for clinical trial readiness programs.

Explore

The FSHD Medical Education Portal not only provides education, professional services and resources about FSHD, it also offers complimentary Saliva Research Test for participants wanting to sequence and check their DNA for any FSH mutations – making them eligible to partake in the FSHD Medical Research & Clinical Trial Readiness Program.

- A Complex Introduction
- Diagnostic Technology
- FSHD Global Registry
- FSHD Saliva Research Test
- Clinical Trials
- Professional Services
- Research & Publications

FSHDmedicalportal.org

FSHD Saliva Research Test

As global medical research advances, so too does our knowledge and understanding of FSHD. While this Portal helps to educate and share resources with our community, it also encourages people living with FSHD to be part of the FSHD Global Registry, and be a catalyst for change.

In addition the Portal assists people and their families to order a complimentary FSHD Saliva Research Test delivered to their home, to better understand their own DNA sequencing relating to FSHD, and furthermore offers these participants an opportunity to then join the FSHD Medical Research & Clinical Trial Readiness Program.

Below are the steps on how to get involved, and become active in advancing research for treatments and an ultimate cure.

STEP 1

Sign up to the FSHD Global Registry

Note your personal information will be securely and privately stored on our HIPAA compliant database.

STEP 2

Order a FSHD Saliva Research Test

Upon your request the Foundation will send this test to your residence via Australia Post. Please note tests can also be sent to countries outside Australia).

STEP 3

Spit in the tube provided as per directions

Note test results will be disclosed confidentially between you and Prof. P. Jones, Reno School of Medicine.

STEP 4

Mail your Saliva Research Test to Reno School of Medicine, USA

You are responsible for mailing your Saliva Research Test to the University of Nevada, Reno School of Medicine, USA. Note: FSHD Global Research Foundation will reimburse the first 100 tests mailed.

STEP 5

Prof. P Jones will contact you directly with your results

Your results will be kept completely confidential between you and Prof. P. Jones, Reno School of Medicine.

STEP 6

You Decide

Donate Your Results

Donate your Saliva Research Test results to join the FSHD Medical & Clinical Trial Readiness Program

- You can request to remove your results at any time.
- Results may be anonymously shared to support and advance medical research.
- When biotech's require participants, and/or a clinical trial is recruiting you will be contacted.
- Note: Your results will be stored in a highly secure HIPAA compliant cloud database, and will be deemed as confidential information.

Keep your results to yourself.

Note: FSHD Global is not involved in performing the research testing and does not have access to your results unless you choose to provide them.

This is a research test and not considered an official diagnostic.

You do not have to have prior genetic testing for FSHD to participate.

Grants Snapshot

A CURE FOR FSHD

Research projects that are focused on developing treatments to treat the underlying cause of FSHD progression.

MUSCLE WELLNESS

Research projects that are focused on developing treatments to improve musculoskeletal health, strength and well being.

Grant 8
Title: Dysregulated Pathways in FSHD: Recreating the FSHD Phenotype

Grant 6
Deciphering the long distance interactions of the D4Z4 array in control and FSHD cells

Grant 4
Comparing the Dnasel Hypersensitive Chromatin Landscape at 4q35 of FSHD and Contol Cells

Grant 2
Derivation of human embryonic stem cells to aid medical research in FSHD

Grant 3
Biomarkers in FSHD, a metabolome study in blood, urine and muscle

Grant 51
FSHD Medical Education Portal

Grant 22
Increasing SMCHD1 Levels as a Therapy for FSHD1 & FSHD2

Grant 5
Defining the mechanism controlling musclespecific gene expression in FSHD

Grant 23
Grant 23A – current description Grant 23B - Bone health in FSHD

Grant 25
Enhancing BMP signaling to treat FSHD

Grant 1
Investigation into the role of FHL1, Calcineurin and NFAT in reducing muscle wasting in FSHD

Grant 9
Investigation of the role of FHL1 as a novel therapeutic target to reduce muscle wasting

Grant 36
Effect of creatine monohydrate on strength and muscle mass in children with FSHD

Grant 46
Developing a systemic myostatin-inhibiting gene therapy approach to improve muscle weakness in a new FSHD mouse model

Grant 45
Crystal structure of DUX4 protein domains

Grant 19
FSHD drug discovery based on chemical inhibitors of DUX4

Grant 43
Targeting Dux4 using gene-silencing oligonucleotides in FSHD models

Grant 44
Physical function outcome measures in paediatric FSHD

Grant 10
Title: Study of DUX4 and DUX4c gene expression in human embryonic stem cells

Grant 7
Molecular Genetic Basis of Facio Scapulo Humeral Dystroph

Grant 15
DUX4 inhibition as a therapeutic strategy for FSHD

Grant 24
Generation of Drosophila-Based Biomedical Models of FSHD

Grant 11
Deciphering the long distance interactions of the D4Z4 array in control and FSHD cells

Grant 14
Tissue-specific silencing of the Planar cell polarity gene FAT1 as a causal mechanism for FSHD

Grant 21
Drug targeting of myoblast fusion as a treatment for FSHD

Grant 35
The Consensus

Grant 40
Living life with FSHD: who is affected and how.

Grant 12
Culture and Expansion of DUX4 in Human Embryonic Stem Cells Carrying FSHD

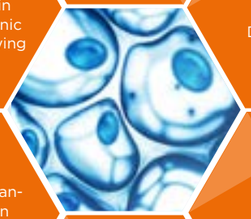
Grant 13
Bill Moss AO Fellowship for Dr Leslie Caron

Grant 18
Study on the clinical features, expression profiling, and quality of life of infantile onset FSHD

Grant 20
Identification of drugs for the normalization of aberrant FSHD candidate gene expression

Grant 38
Small molecule inhibitors of DUX4 as FSHD therapeutics

Grant 47
Pre-clinical testing for FSHD CRISPR-inhibition therapy



Grant 17
Evaluation of antisense strategies to suppress DUX4 expression in FSHD

Grant 32
A multicenter natural history and biomarkers study of infantile onset FSHD

Grant 41
Characterisation of DUX 4 protein – protein interactions in FSHD cell lines and tissue biopsies by cross-linking and mass-spectrometry

Grant 26
Culture and Expansion of DUX4 in Human Embryonic Stem Cells Carrying FSHD

Grant 16
Bill Moss AO Fellowship for Dr Leslie Caron

Grant 30
HDL based therapy is a potential treatment for FSHD

Grant 33
Facio Therapies Biotech

Grant 37
The next wave of whole genome sequencing-based FSHD diagnostics, and clinical measures of progression

Grant 48
Muscle-in-a-dish, development of an in vitro platform of human skeletal muscle

MUSCLE TECHNOLOGY

Research projects that are focused on developing technologies to improve muscle movement and replace or repair damaged tissues.

Grant 27
Functional study of a novel candidate gene for FSH (LRIF)

Grant 29
Training Agreement to The Netherlands

Grant 34
Drug targeting of myoblast fusion as a treatment for FSHD

Grant 49
FSHD cell characterisation project – exome sequencing

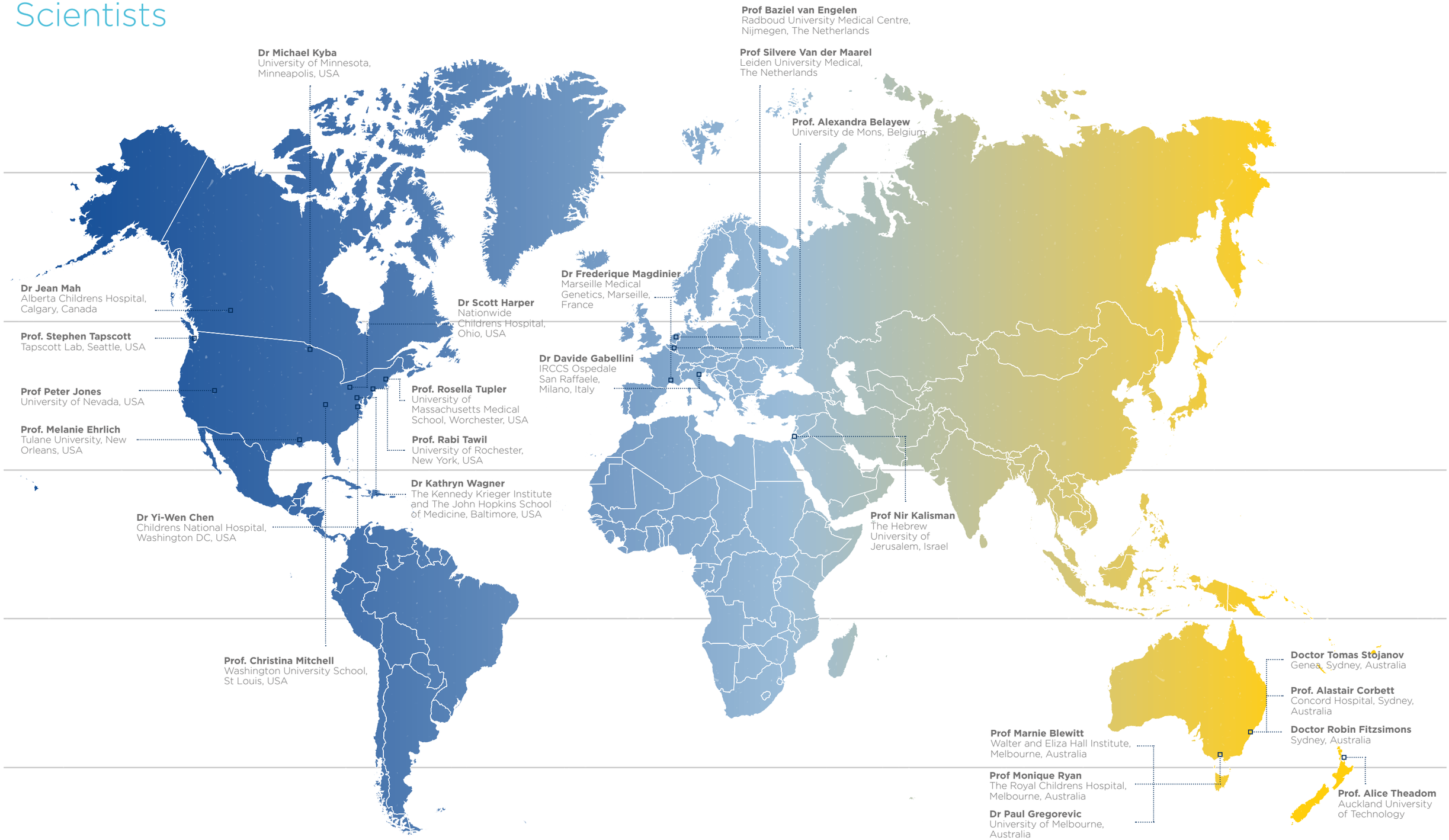
Grant 39
High throughput chemical screens for activators of SMCHD1, as potential therapeutics for FSHD

Grant 50
Facio Therapies Biotech

Grant 28
Application of novel isoflavones in an FSHD hESC model system

Grant 31
Development and synthesis of AO transporter

Meet the Scientists



Active Grant Update

Grant 36

Research Institution:
Murdoch Children's Research Institute, The Royal Children's Hospital, Melbourne, Australia

Principal Investigator:
Dr Ian Woodcock

Type:
Australian

Project Title:
Effect of creatine monophosphate on strength and muscle mass in children with FSHD

Unfortunately, despite our optimism about having closed the trial to recruitment there has been one last sting in the tail: the COVID-19 pandemic. Unfortunately, the pandemic and the associated restriction in international and interstate travel, the lockdowns and the suspension of all clinical trial related research work at several hospitals and institutes across the country including RCH and MCRI has severely impacted this clinical trial.

Of the three participants currently actively enrolled in the trial, one from New Zealand is stuck in the washout phase. As there is no foreseeable resumption of international travel, we are thinking of other ways to complete the trial, of which the most likely way would be to perform assessments remotely over Zoom or other such medium. One of the two participants from Queensland has withdrawn from the study and the final participant has just rolled over into phase two and so should complete the protocol in three months.

My new and revised plan, if we are able to restart the participant from New Zealand remotely would be to complete the active phase of the trial in three or four months. Hopefully for my next update I will have news of completion of the active phase, but this will depend somewhat upon the state of the international pandemic.

On a more positive note the research into paediatric FSHD occurring at Melbourne Children's Campus was highlighted in three poster presentations at the recent virtual FSHD International Research Congress. This was an interesting event, being the first virtual conference I have attended with the time difference between Australia and the USA meaning that the conference started at midnight Melbourne time and continued through to three in the morning. It was great to hear updates about research across the globe, although there is still a definite paucity of research into FSHD in the paediatric age group.

As always, I am very grateful and appreciative of FSHD Global's support and patience. Without your support I would not have been able to run this trial, gain valuable experience in running a clinical trial in the population affected by FSHD and foster a likely lifelong interest in FSHD clinical research.

Grant 39

Research Institution:
Walter and Eliza Hall institute of Medical Research, Melbourne, Australia

Principal Investigator:
Assiatant Professor Marnie Blewitt

Type: Australian

Project Title:
High throughput chemical screens for activators of SMCHD1, as potential therapeutics for FSHD.

The protein SMCHD1 has been shown to play an important role in FSHD, where it keeps the specific DNA element that causes FSHD in check, by ensuring that it is switched off. Our project is to identify drug-like chemicals that boost SMCHD1's activity, as potential therapeutics to treat FSHD. The hope is by boosting SMCHD1 activity, the DNA element responsible for FSHD can be effectively switched off.

COMPLETED Aim 1. Perform high throughput chemical screens for activators of SMCHD1 ATPase activity.

Aim 2. Validate small molecule activators of SMCHD1's activity in biochemical and cell-based assays.

In Aim 1, we screened around 120,000 chemicals for their effect on SMCHD1's activity (Aim 1, completed Feb 2018); however, after validation steps, we did not isolate a chemical that has the capacity to enhance SMCHD1's activity. Finding a chemical that makes a protein work harder is much more challenging than finding one that breaks that protein i.e. inhibits its activity, so was not entirely unexpected. Without a hit, we were unable to progress to Aim 2.

We had approved a variation to funding, introducing **Variant Aim** A and a new set of milestones (1-4). We proposed to use an alternative high throughput screen methodology, to screen chemical fragments in a more cost effective method manner. Rather than testing the effect these chemical fragments have on the enzyme activity, fragment screens instead they test whether they bind to SMCHD1, and with what affinity. After fragments that bind are found, they are improved using the 3D structure of the protein to guide the design of chemical modifications. Finally, they would be tested for their effect on SMCHD1's enzyme activity and engineered to become activators.

Variant Aim A. Perform a fragment screen to identify fragments that bind SMCHD1's ATPase domain.

Milestone 1. Milestone 2 Milestone 3 Milestone 4

Large-scale protein production, NMR assay establishment and primary screen **Complete**
Validation of up to 100 hits in single fragment competition assays by NMR **Complete** SAR by catalogue for the top 20 hits to reveal the top 3 fragment scaffolds, and their effect on ATPase activity for <10μM affinity fragments **In progress**

Fragment expansion and testing ATPase activity

Progress towards the variation aim and milestones

We completed Milestone 1 of Variant Aim A in August 2019, and Milestone 2 of Variant Aim A in December 2019. Milestone payments received.

Milestone 3 – SAR by catalogue for the top 20 hits to reveal the top 3 fragment scaffolds, and their effect on ATPase activity for <10QM affinity fragments

The highest confidence 12 compounds from fragment screen are now the subject of structure activity relationship (SAR), where chemists at Monash Institute of Pharmaceutical Sciences have obtained all 153 known compounds that are similar to these 12 compounds. The idea is to investigate chemicals with small differences to the original 12 to work out which features of the compound enables tight binding to SMCHD1. The chemists have invested significant time performing quality control on these 153 compounds and 100 have passed quality control. Testing how tightly these 100 compounds bind to SMCHD1 is ongoing. So far, there are 31 compounds that bind with an affinity of less than 500 μM. In parallel, chemists at Monash Institute of Pharmaceutical Sciences will test in house available compounds that are similar to the 12 best fragments, for how tightly they bind SMCHD1. Over the coming 2 months we will learn if any of the 100 compounds have sufficiently tight binding to test their effect on ATPase activity.

With all of the affinity data in hand, analysing the structures of the compounds with the tightest binding will reveal which parts of the compounds are essential for binding, which make binding higher or lower affinity. These experiments should lead to compounds that are higher affinity for SMCHD1. Following on from this we would use the 3D structure of SMCHD1, which was published last year, to optimize binding to a level that means the compounds can be engineered to activate SMCHD1 (Milestone 4).

Conclusion and or expected outcomes of the project
We have performed a screen of 1142 chemical fragments, that identified 100 putative SMCHD1 binding chemical fragments. We have validated 12 of these compounds in three assays and are now studying how small modifications to these compound structures influence how tightly these molecules bind SMCHD1. Taking advantage of the newly published 3D structure of SMCHD1's ATPase domain, with appropriate medicinal chemistry staff we will be able to engineer binding fragments not only for their affinity, but also to try and create moieties that allow them to activate SMCHD1's activity, as a potential treatment for FSHD.

Lay description
The molecule SMCHD1 has been shown to play an important role in FSHD, where it keeps the specific DNA element that causes FSHD in check, by ensuring that it goes unnoticed in the cell i.e. it is switched off. Our project is to identify drug-like chemicals that boost SMCHD1's activity, as potential therapeutics to treat FSHD. Our original screen of ~120,000 drug-like chemicals did not reveal any activating chemicals; however, we have now successfully performed an alternative screen where we have validated 12 chemical fragments that can bind to SMCHD1. We are now investigating these molecules to make small changes to them and see whether this enhances or depletes their binding to SMCHD1, and already have 31 molecules that bind with moderate affinity to work on further. This work lays the foundation for the next steps, engineering these molecules to bind more tightly, more specifically and with further investment, to activate SMCHD1's activity. Such molecules would be considered lead candidates to develop as a new therapeutic for FSHD, that targets the underlying cause of disease.

Grant 41

Research Institution:
The Hebrew University of Jerusalem, Israel

Principal Investigator:
Assistant Professor Nir Kalisman

Type: International

Project Title:
Characterisation of DUX4 protein-protein interactions in FSHD cell lines and tissue biopsies by cross linking and mass spectrometry

Our project aims to study the interactions of DUX4 with other proteins by a powerful experimental technique – cross-linking and mass spectrometry – that will chart these interactions in unprecedented detail. A first round of experiments, which was performed in cell cultures, identified several interactors of DUX4, most notably the nuclear proteins: C1QBP, XRCC5 and XRCC6. We also localised the DUX4-C1QBP interaction to the second homeobox domain of DUX4. We are now in the middle of a second round of experiments that will localise these interactions in more detail. Our next aim is to use the great sensitivity of mass spectrometry to verify these findings directly in human muscle tissue, thus demonstrating their clinical relevance.

We showed that C1qBP is a direct and major interactor of DUX4 (and DUX4c) by crosslinking coupled to mass spectrometry (XL-MS). The study of C1qBP by Western Blot (WB) and Immunofluorescence (IF) has enabled us to determine its expression and localization in healthy and FSHD myoblasts. C1qBP was found in both the nuclei and the cytoplasm, and was most associated with active mitochondria.

Unfortunately, our work plans for this reporting period were seriously disrupted by the COVID19 pandemic. This included shutdown of the universities and the canceling of a work visit to perform in-situ cross-linking of myoblasts. During the shutdown, the Kalisman lab have finished the analysis of the last set of mass spectrometry measurements from December 2019. The results are encouraging (Figure 1) and provide further evidence for our previous claim that C1QBP is the main interactor of DUX4c. We also technically advanced the methodology of in-situ XL-MS and published a paper on the subject (https://doi.org/10.1038/s41467-020-16935-w ; FSHD Global is acknowledged in its support of Moriya Slavin who contributed significantly to this paper).

Before the shutdown, the Coppée lab have performed a series of WB to determine the expression profile of C1qBP in healthy and FSHD myoblasts and myotubes. An increase of C1qBP expression during differentiation of myoblasts was observed. Additionally, we obtained additional IF data that show lower levels of active mitochondria in FSHD compared to healthy myoblasts (Figure 2).

In the next few months, we are planning to perform in-situ XL-MS of myoblasts followed by immunoprecipitation of DUX4 complexes and mass spectrometry. In addition, we are working with Prof. Van Engelen (University of Nijmegen) on a parallel method to detect the DUX4/4c-C1qBP interaction in fixed sections from human muscle biopsies. We hope that these efforts will further strengthen the relevance of the DUX4-C1QBP interaction to FSHD.

Grant 43

Research Institution:
The University of Melbourne, Australia

Principal Investigator:
Associate Professor Paul Gregorevic

Type: Australian

Project Title:
Testing novel therapeutic strategies to combat the metabolic disturbances underlying the muscle pathology of FSHD

Our Team developed “mouse” and “human” models of muscle disease associated with FSHD. In these models we have defined changes in gene activity and protein expression caused by DUX4, that occur before the loss of muscle function. Based on these findings, our project is exploring how DUX4 affects gene expression related to metabolism in muscle. We predict that understanding these DUX4-driven events will help to identify key processes that cause muscle disease in FSHD. Our recent studies have found that muscle cells expressing DUX4 demonstrate impaired activity of a specific network of signalling proteins, referred to as the Hippo pathway. As we have found that the Hippo pathway is a regulator of metabolism that affects muscle mass and function, our project is exploring whether targeting processes regulated by the Hippo pathway may offer therapeutic opportunities for FSHD.

Aim 1 objective: To test the potential for protecting mouse and human muscle cells from DUX4-induced pathology by restoring the activity of the Hippo pathway.

Progress towards project Aim 1: We have developed and validated new gene delivery tools and small molecules that can alter the activity of the Hippo pathway in mouse and human cells. We assessed if Hippo pathway activation prevents functional decline in engineered human micro-muscles expressing DUX4. These interventions increased function in healthy muscles, but did not prevent functional decline following DUX4 activation. The human-derived micro-muscle cultures help us to study signalling mechanisms, but still lack some of the complexity of skeletal muscles in vivo. Therefore, our work includes the complementary study of mouse limb muscles expressing the mouse Dux gene. To enable mouse studies, we have optimised gene delivery tools to activate YAP directly, or via an upstream signalling protein. These mouse studies are ongoing.

To understand the effect of DUX4 on skeletal muscle metabolism prior to changes in function, we incubated adult mouse limb muscles expressing DUX with radioactive-labelled sugars and fats. Muscles treated with gene-delivery tools lacking any product (empty vector) were used as a control. DUX-expressing muscles displayed a marked defect in the capacity to oxidise and metabolise fats compared to controls (Fig 1C), but did not develop defects in sugar metabolism (Fig 1D). These findings show that DUX4 expressing muscles have impaired capacity to handle fatty acids specifically, with harmful consequences for muscle function.

We next sought to assess the metabolic and functional consequences of increased YAP activity directly or by expressing IC7-FC in mouse limb muscles co-expressing DUX4. Our capacity to perform these studies was impacted by restrictions due to the COVID-19 outbreak. These studies have now been initiated according to University guidelines that should enable completion by Sept 2020. Despite COVID-19 restrictions, the project has met nearly all the stated goals on time. We hope to be back on the original timeline within a few weeks.

Our findings to date have shed new light on the early metabolic changes that occur in muscles following activation of DUX4. Each of our experimental Aims is exploring a therapeutic strategy that could be developed to overcome these impaired mechanisms. We look forward to providing updates on the effectiveness of the interventions in future reports. We are grateful to the FSHD Global Research Foundation for continued support of this project and welcome any opportunity to receive feedback or discuss our work further.

Grant 44

Research Institution:
Murdoch Children’s Research Institute, The Royal Children’s Hospital, Melbourne, Australia

Principal Investigator: Ms Katy de Valle

Type: Australian

Project Title:
Physical function outcome measures in paediatric FSHD

The investigation of the measurement properties of reliability and validity of the FSH-composite outcome measure (FSH-COM) and the FSH-Health Index (FSH-HI) in children aged 5-18 yrs with a diagnosis of FSHD.

Recruitment and data collection for children with FSHD, has been completed. Recruitment of final four age and gender matched controls has been hindered due to COVID19 restrictions and likely will not go ahead.

Eighteen participants with FSHD (10 male) ranging in age from 7-18 years and 14 typically developing controls have been recruited into the study. Disease severity scores (assessed by the FSH-clinical score) range from 2-13 and mean severity score 5.2/15.

Collection of both reliability and validity data required participants to attend study sites on two occasions. If participants were unable to commit to two visits, validity data only was collected. Three subjects elected not to return for a second visit due to school commitments therefore could not complete the reliability data for the FSH-COM outcome measure. Validity data was collected for all participants.

Recruitment through other sites around Australia and New Zealand has been more difficult than first anticipated. Two participants (one from Tasmania and one from New Zealand) have utilised the financial support made available through Grant 44. Both successfully completed the study. Funding also provided the support required for me to travel to Brisbane on two occasions to collect reliability and validity data from three participants recruited through Queensland Children’s Hospital.

Analysis of reliability and validity data has been completed and a manuscript is in preparation for submission to peer reviewed journal by end August 2020 (Milestone 4).

The protocol for this study was presented as an e-poster at World Muscle Society Conference in Copenhagen 2019 and reliability data was presented as a poster/video at the FSH IRC on-line conference in June of this year.

Conclusion:
If children and adolescents with FSHD are to be included in intervention studies it is essential that outcome measures are available with evidence to support their accuracy and validity. While additional work to refine both the FSH-COM Peds and FSH-HI Peds is required, the potential for these measures to be used successfully in a paediatric population is promising. With pharmaceutical trials already underway in the adult setting, the possibility of including children in clinical trial process is made more achievable by the results of this research.

I would like to thank FSHD Global Research Foundation for the grant support which has enabled the timely completion of this project.

Grant 45

Research Institution:
University of Minnesota, United States of America

Principal Investigator:
Associate Professor Michael Kyba

Type: International

Project Title:
Crystal structure of DUX4 protein domains

The studies under this grant are focused on understanding the structure of an important functional part of the DUX4 protein. The DUX4 protein is large and has three main domains: at one end (the "N-terminus") is the part of the protein that binds DNA; in the middle is a linker sequence that can be removed without affecting its function, and at the other end (the "C-terminus") is a part of the protein that allows DUX4 to "turn on" or activate the genes that are nearby the DNA sequence that the N-terminus is bound to. Understanding how the C-terminus works is an important near-term goal for a mechanistic understanding of FSHD. We have previously determined the 3D structure of the N-terminus in complex with DNA Determining the structure of the C-terminus will lead to a better understanding of the function of DUX4 and will aid in the search for chemical compounds that inhibit the protein that may be used as drugs to treat FSHD.

In the past period, we have produced the C-terminus of DUX4 as a protein in the laboratory, and used a technique referred to as nuclear magnetic resonance (NMR) to study its structure in solution. We found that the C-terminus of DUX4 shows characteristic features of unstructured protein in solution. We then tested the hypothesis that this domain might be unstructured but adopt a certain structure when it complexes with other proteins that it binds to. We previously discovered that this part of DUX4 interacts with a protein named p300, which is part of the molecular switch mechanism involved in turning genes on. We therefore combined the DUX4 C-terminus iwth a part of the p300 protein and performed additional NMR analysis. This revealed that the DUX4 C-terminus acquires a rigid structural conformation in the presence of the protein that it interacts with.

Our ongoing work is focused on attempting to co-crystalize the C-terminus of DUX4 with the domain of p300 that it interacts with. The objective is to acquire crystals that can be used for X-ray crystallography studies to accurately determine the structure of this important part of the DUX4 protein.

Grant 48

Research Institution:
Hubrecht Institute, The Netherlands

Principal Investigator:
Professor Neils Geijsen

Type: International

Project Title:
Muscle-in-a-dish, development of an in vitro platform of human skeletal muscle

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This report provides an overview of our ongoing work withing the FSHDglobal project, with the goal of creating an advanced human in vitro model for FSHD. The first part of the report describes our progress establishing and optimizing the creation of 3D muscle tissues using 3D printed melt-electrowritten scaffolds. The second part of the report describes a new, mutliwell in vitro platform that we are establishing to create 3D micro muscles to allow high troughput screening for compounds or genes that can mitigate Dux4 cytotoxicity seen in FSHD patients.

Current state

Aim 1: In vitro development of muscle progenitor cells and their embedding into 3D printed matrix

The extracellular matrix (ECM) of skeletal muscle can be divided into three interconnecting layers; the epimysium – surrounding the entire muscle bundle, the perimysium – surrounding multiple muscle fibers within a muscle and the endomysium which surrounds each muscle fiber individually. The ECM plays a trivial role in many processes within the muscle. (Kovanen 2002). Skeletal muscle is composed out of contractile elements that rely on the extracellular matrix (ECM) for their function and organization by its mechanical support and its role in force transmission within the muscle bundle. The ECM not only provides mechanical support to muscle cells, it also has a significant role in muscle development, disease and regeneration. (Gillies et al. 2017; Kragstrup, Kjaer, and Mackey 2011).

Muscle organization facilitated by the ECM relies on the fibrous nature of the ECM which should be taken into account when recapitulating this in vitro. Therefore, there is a need for fibrous scaffolds that mimic the ECM in both structure and function. Fibrous scaffolds have been shown to guide cell alignment and therefore cell organization (Castilho et al. 2017). Above all, fibrous scaffolds have the potential to be engineered in a way that allows for motion control of the ECM and active mechanical and electrical stimulation of the ECM allowing for an in vitro model that can reach the fidelity of native tissue.

Melt ElectroWriting (MEW) is a unique additive manufacturing process that allows automated scaffold production of very fine fibres in highly ordered arrangements. Despite its great potential for tissue regeneration applications, this manufacturing process is limited to the deposition of fibres along a two- dimensional (2D) plane (in-plane), which restricts the fabrication of out-of-plane architectures with level of programmed architecture found in biological systems. Additive manufacturing of biocompatible materials that can be actuated by heat, light, magnetic stimulus is envisioned as a promising strategy to achieve complex, programmed 3D architectures. However, only a subset of known materials with such properties have the potential to be processed by MEW, and an even smaller subset is biocompatible.

To reach our first aim of embedding muscle progenitors into a 3D environment, MEW was used to create biocompatible scaffolds as a means to establish a robust protocol. This was initially done by using the immortalized myoblast cell line C2C12 and melt-electrowritten scaffolds made out of polycaprolactone (PCL). Compared to 2D cultures, C2C12 cells show myotube formation when put in the 3D environment (figure 1) and therefore resemble native muscle tissue more closely.

Based on previous experiments and literature, we found that a blend of Matrigel and Collagen type I (1:2 ratio) is the most optimal hydrogel formulation for our system. In addition, we move from using the immortalized C2C12 cell line to using human iPSC-derived myoblast, which better resemble primary myoblasts. Using the Pax7-GFP reporter cell line we established, we further optimized a protocol established by Hicks and colleagues (Hicks et al. 2018) to allow efficient in vitro generation and isolation of myogenic progenitors. However, upon seeding these cells on the MEW matrix, we noticed a significant batch-to-batch variation in the alignment and differentiation of the seeded cells between different experiments. Further optimization and standardization of the protocol revealed that in addition to the matrix composition, the starting cell count was a critical component of the system, affecting both fiber alignment and differentiation potential.

The final step in optimizing our 3D in vitro system before moving to aim 2 *(Integration of electroconductive materials into the 3D matrix to connect the in vitro muscle tissue with an electrostimulatory device)*, is optimizing the scaffold shape. Different shapes have different mechanical properties and as described earlier; the mechanical properties of skeletal muscle are of great importance when mimicking muscle in vitro. Next to the squared shaped scaffolds, which are limited in their mechanical properties, the shapes "auxetic" and "honeycomb" or "hexagon" will be tested. These shapes have unique mechanical properties and allow for distinct stretch and strain behaviour which will be of benefit when moving to aim 2.

Aim 2: Integration of electroconductive materials into the 3D matrix to connect the in vitro muscle tissue with an electrostimulatory device

Graphene-based materials (GBM) are promising materials that can be externally stimulated by a magnetic field and have already demonstrated their potential in many studies. Magnetite (Fe3O4) is a material that also has been shown to produce magnetic nanofibers, however, because of the iron particles, cells may die due to its toxicity. (Andersson et al., 2016; Feng et al, 2018) This leaves room for the development of new materials. When magnetite and graphene react with each other, graphene oxide particles get magnetized. We have developed a new material containing PCL and graphene oxide and are currently optimizing the printability of this material.

While the MEW system described above will allow us to model and study the effect of differences in muscle physiology in FSHD outcome, and for example investigate why some skeletal muscles are affected by the disorder, whereas others are not, the MEW platform is less suitable for high troughput drug screening or genetic screening approaches aimed at therapeutic intervention. We are currently working on establishing the system published by Ashfar et al., (2020) that allows the generation of skeletal muscle microtissues in a 96-well screenable format. This system has been shown to work for primary human myoblasts. We are going to use FSHD patient iPSCs to establish the 3D muscle tissue model to more closely mimic the natural physiological state and pathogenesis of FSHD.

FSHD
Educational Toolkits

The Foundation was thrilled to release a range of educational toolkits for Patients, GP's and Allied Health Professionals. We set out with the goal to empower our community when championing for support within the medical world.

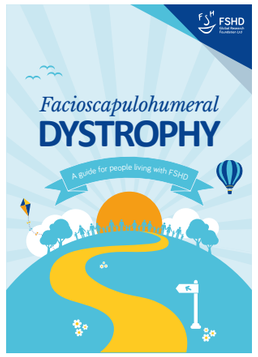
FSHD Global convened a workshop of 13 leading International and Australian clinicians to develop a clinical practice guideline on FSHD. The guideline covers diagnosis and management of FSHD and sets out the standard of care that people with FSHD in Australia should expect from their care team.

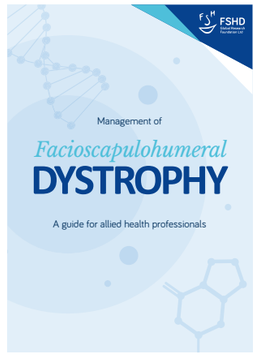
From this, the Foundation created a set of free and accessible Educational Toolkits for people living with FSHD and health care providers. The "Living with FSHD" booklet covers the care that you should expect from your healthcare team, steps for diagnosis, understanding test results, guidance on communicating with health professionals and some handy tools that may help make appointments more productive. The other booklets are great resources for your health care providers to help them better understand the genetics of this disease, symptoms, prognosis and the effective management of FSHD.

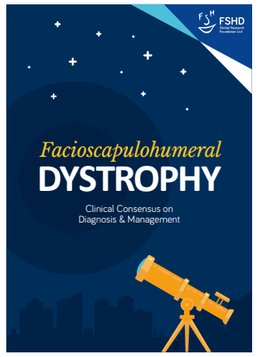
These global resources are available to download and share at www.fshdglobal.org/news/fshd-educational-toolkits/

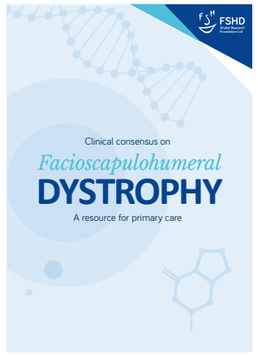
Contact the Foundation to receive your hard copy or learn more on how these resources can benefit you!

admin@fshdglobal.org
(02) 8007 7037









Our Fundraising

Christmas Campaign

Our Christmas Campaign is an FSHD Global initiative that encourages our community to share their personal journey of living with FSHD. The aim of this platform is to create much needed awareness and education in our community which in turn highlights the importance of our work as we continue to drive medical research forward towards treatments and a cure for FSHD.

Sydney Chocolate Ball goes Digital

The 2019 11th Annual Sydney Chocolate Ball was due to be held on Saturday 9th May 2020. With the onset of COVID-19 and government restrictions enforced for events, it was with heavy heart that we had to cancel the 2020 Sydney Chocolate Ball. The decision was not taken lightly, but the safety and well being of our guests, sponsors, volunteers and supporters come first.

Each year the Foundation relies heavily on the Sydney Chocolate Ball to fund our mission to find a cure for FSHD. The decision to cancel the Ball has put severe constraint on the Foundations ability to fund world class medical research, education and FSHD biotech, as we pave the way towards clinical trials for this debilitating disease.

Historically 100% of all tax-deductible cash donations have funded medical research. As we hope to maintain this proud point, FSHD Global launched Sydney Chocolate Ball goes Digital. This online platform was a replica of the fundraising initiatives that would have been held at the Sydney Chocolate Ball event. The Sydney Chocolate Ball goes Digital platform featured an online silent auction, a raffle and donation drive. With thanks to our many loyal supporters and sponsors, we raised over $104,000.

End of Financial Year Campaign

Our End of Financial Year Campaign was led by our Founder and Chairman, Bill Moss AO, as a Double your Donation matching campaign. Mr Moss generously donated $250,000 which was the catalyst in driving another $250,000 in donations. With thanks to our generous community, sponsors and supporters, FSHD Global was successful in raising over $514,000 in donations.

Our Community

Wyndham Destinations Corporate Surf Challenge

Wyndham Destinations has been a long and loyal supporter of FSHD Global for over 10 years. The 2019 Corporate Surf Challenge was the 6th event hosted by Wyndham which raised over $21,700 for FSHD Global. Proudly supported by Wyndham Destinations Ambassador Layne Beachley and attended by a fantastic group of corporates who came together to not only surf but raise much needed money for our cause. Thank you again to Wyndham for their continued and valued support of our Foundation.

AFL Footy Tipping Competition

President of the Victorian State Branch, Les Jones, once again ran the annual AFL footy tipping competition, raising over $1,400 for FSHD Global.

Dentons Corporate Raffle

Thank you to Dentons who are a Corporate Partner of FSHD Global. We had the opportunity to hold a raffle in their Sydney office, with their generous staff contributing over $2,100 in raffle ticket sales.

Ben Schultz – Alcohol Free for FSHD

FSHD Global Ambassador, Ben Schultz ran his own fundraising campaign by going alcohol free and raising awareness for FSHD. His generous network, family and friends sponsored Ben during time, raising over $2,150. Thank you Ben!

FSHD Global Monthly Giving Program

Have you signed up for our Monthly Giving Program? We are fortunate to have a very generous community, who have donated over $33,000 via our giving program. If you would like to be part of this important program, you can sign up at fshdglobal.org

Giving Tuesday

On the first Tuesday in December each year – we celebrate Giving Tuesday! This is a global initiative that invites communities to give to their chosen charity. This is the first year that FSHD Global has participated in this campaign and successfully raised over $7,300 during this 24 hour challenge. Thank you to our amazing supporters for your continued support!

Social Media, Birthday and School Fundraisers

Thank you to the many supporters who hosted their own social media, birthday fundraisers, community or school events in raising awareness and donations for FSHD Global. We were grateful to have received over $10,000 in donations via these events, including international fundraising event.

WORLD FSHD DAY

Unite to find a cure

World FSHD Day

FSHD Global initiated World FSHD Day – a day uniting all FSHD organisations around the world to bridge the gap of education across government, families and media on the effects of the disease and raising greater awareness and funding opportunities worldwide. This initiative continues to grow each year with our communities hosting their own events to raise awareness and funding for FSHD Global. This year our community raised over $1,600. No matter how big or small your event is, every dollar counts and is invested directly into medical research for FSHD.

Joseph‘s Story

Over time, the periods without voice grew longer. Eventually, my voice no longer returned, so that nowadays I can only speak in a quiet, raspy whisper. Thus, oral communication has become very difficult, especially since I no longer have the hand strength to write notes when I’m misunderstood nor the arm and body strength to point or mime.

One other consequence of my continuing loss of muscle function is the G tube that I had surgically implanted through my abdomen in 2006. I can still eat almost everything, but I do so extremely slowly and I frequently choke and cough while I’m eating. It finally became apparent that I was not getting enough nutrition and particularly not enough hydration through my oral ingestion, so now I have the G tube to supplement both nutrition and hydration as needed.

In my family growing up, education was a highly valued quality, more so than any physical or athletic endeavor. Neither of my parents had more than a high school education, but they made sure that each of their sons had the opportunity to go further in schooling than they did. I can still remember my parents stressing to me the importance of studying hard and doing well in school. As they explained it to me in my youth, I was never going to get a job relying on my muscles, so I needed to do well in school so as to support myself with my brain. I took that lesson to heart, and I thrived in school. I graduated high school the valedictorian out of a class of 225. In college, I double-majored in mathematics and chemical physics, again finishing atop my class. Then, I went on to graduate school at Emory University to earn a Master’s degree in computer science and a PhD in mathematics. I typed two dissertations essentially using just two fingers, my only two fingers still strong enough to do the work.

While in graduate school, I met my wife Esther. Before I had met her, I had lots of female friends but very few girlfriends and I dated very little. The first time that I saw Esther, I was immediately attracted to her and wanted to ask her out. Before I could do so, however, she let slip that she was already seriously commited to someone else. In my mind, I felt sad and hurt that she was just another woman romantically unavailable to me, but nonetheless I resolved to become friends with her. We became very close friends, and as our friendship grew, it became clear to me that her relationship with this other guy was far rockier than I had been lead to believe. Eventually, she and he decided to separate – having very little to do with me – and she and I have been together ever since. We are married together 33 years now. I believe that one of the main strengths of our marriage is that friendship we formed before we ever started dating. She remains my best friend all these years later.

Upon completing my graduate studies, Esther and I – then newly married – moved to New Jersey so that I could accept a position writing and supporting computer software for the telephone companies. In that position, my difficulties typing – a crucial skill for anyone involved in computer programming – continued until eventually I could type no more. Then, to maintain my job, I had to adapt to voice-recognition software to type for me. I used the voice-recognition software for several years, until I started losing my voice after I became ventilator-dependent. Then, I had to adapt once again, this time to a device called Darci that generates computer input from Morse code signals that I could reliably produce by rocking my torso side-to-side in order to hit a switch mounted close to my head. Finally, I adapted to an eye-tracking device called Eyegaze to type for me, and I continue to use Eyegaze to this day, even to write this story. Through all these adaptations, I still managed an 18.5 year career with the same company, only terminating my career in 2006 after my job responsibilities were outsourced to the Ukraine.

At the point of this forced adjustment, I decided to disability retire rather than to try to interview without a voice for a new job.

In regard to having children, Esther and I were both well aware of the risk of passing along my FSHD to any child that I sired. Consequently, we initially chose to use artificial insemination with donor sperm to have children. Each insemination attempt was quite expensive, though, and after several attempts Esther still had not fallen pregnant. Finally, Esther told me that she did not want to do artificial insemination any more. Instead, she just wanted to make babies the natural way. I again mentioned the risk of our children developing FSHD, to which Esther asked me simply if I felt sorry that I was born. I had to reply, “No, of course not.” Esther then said that if any of our children turned out to have FSHD, we would just teach that child to live with FSHD. After that, Esther got pregnant immediately, and we had a son Ephraim. Because of complications that Esther had during her pregnancy, Ephraim turned out to be our only child. Ephraim is now 28 years old. He has never displayed any symptoms of FSHD, but he has his own disability of Tourette’s Syndrome.

As a father, I can only hope that I set a good example for Ephraim of accepting and handling one’s disabilities with dignity.

Dr. Joseph (Joey) Sherr

Shaun‘s Story

My childhood started out as any other childhood usually would. When I started school, I loved sport, reading books and watching movies as any other 5 year old would. Pretty standard stuff.

At my Grade Prep school sports, I was one of the fastest runners in my whole grade, which I was pretty stoked about, and anyone who knows a 5 year old knows they love to run around quickly and move freely. I was no exception. Fast forward to my Grade 2 school sports and I came dead last in running. This seemed pretty odd to me, so I asked my teacher why I was suddenly so slow and she told me that I must have slowed down as I was getting older, as a normal part of life I suppose. That seemed fair enough to me, however I couldn’t understand why it wasn’t happening to any of the other kids.

Not too long after this, the falls started to happen. I found myself falling over multiple times a day for no apparent reason. I hadn’t made any drastic changes to my daily activities, however now many of them would result in me heading to the school office to get band aids put on my bloody knees as a result of falling over playing footy at lunch time or doing PE class. I thought I was just being a bit clumsy and needed to take more care.

As Grade began, I was fortunate enough to have my dad (Leo) as my teacher. As you can imagine, having my dad as my teacher meant that we spent a lot of time together, and us spending a lot of time together meant that he began to notice that things weren’t quite right with me. The way I walked was becoming slow and sluggish, and I needed to take breaks from walking often, I would arrive home from school each day with no energy after doing nothing out of the ordinary.

After seeing enough changes in me over a short period of time, dad took me to see a doctor. The first time he took me, the doctor looked over me and believed everything was fine, brushed it off as a growth spurt and left it at that. However, being the persistent (and sometimes stubborn) man that he is, my dad took me to get a second opinion from another local doctor who was quite concerned, referred me to a specialist in Shepparton, who then referred me to a specialist at the Royal Children’s Hospital in Melbourne.

Not long after I was given an official diagnosis of Facioscapulohumeral Muscular Dystrophy (FSHD).

Although a diagnosis was a sigh of relief as we now had a reason for the rapid changes in my physical abilities, we now had to prepare ourselves for what my life with FSHD would look like, and the impact it would have on me both Immediately and into the future. Having my dad as my teacher made it quite easy to make adjustments in the classroom and in the school environment for the remainder of my primary school days. Such adjustments included having my own chair with armrests and wheels to make it easier to get out of and move around in, being excused from physical activities such as PE class, swimming and other sporting events. I was also taken out of class once a day for 30 minutes to complete an exercise program organised by a physiotherapist to try and stop the deterioration of my muscles. This was something I absolutely hated as when I was younger I hated being singled out and treated differently than the other kids. I desperately wanted to be normal, to not stand out from the crowd, to not have people stare at me while I walked down the street. However I knew that this was something I would have to face when I made the transition from Primary School to Secondary School. As I was heading up the highway to FCJ College in Benalla, with none of my close friends from St Johns coming with me, it was daunting to have to make new friends when the first thing people would see when they looked at me was my disability.

Despite my fears, I ended up finding it quite easy to make friends by simply being myself, (such a ridiculous cliché I know), I was able to find people who had similar interests to me, such as watching sports and wasting a lot of time playing video games. I had a healthy social life during secondary school (perhaps too healthy at times) because I continued to be myself and not try to be someone I wasn’t, and was fortunate enough to become friends with people who were happy to include me, at times give me a helping hand, and not make

me feel uncomfortable about my disability. For example if I had a fall at school, I had one friend in particular who would pick me up off the ground, I’m not really sure how but he became the man for the job, everybody else knew it and it’s just the way it was. We didn’t make a fuss about it, he’d just pick me up and we’d carry on with what we were doing, just the way I liked it.

Throughout my life I have had various experiences and met various people who have allowed me to become more resilient and to overcome the adversities I have faced. I remember on one of my first visits to the Royal Children’s Hospital, I was having lunch with my parents and on the table next to me was a young boy who had extremely severe burns covering his entire body, his legs had been amputated, he only had two fingers on each of his hands and all of his skin was scarred.

At the time I was only 9 years old and this was quite confronting for me to see, I looked at that boy and thought to myself, “no matter how bad things may get, it could always be worse.” I still think about that moment to this day, and it makes me appreciate what I still have and what I am still able to do. I believe it is important to keep a positive outlook on life, as focusing on the negatives will only hinder you from living a happy and carefree life.

I have also been fortunate enough to travel to the Philippines where I lived in a remote rural community for 10 days to assist in creating better lives for people who have lost their homes to Typhoons. This was an eye opening experience which helped me to appreciate the small things in life we take for granted in Australia. If I had been born in a country like the Phillipines, my access to healthcare would be extremely limited compared to what I have here in Australia, and the thought of this has helped me appreciate the things I have, instead of focusing on what I do not.

The most important inspiration I will share with you is my step mother Sonia. Around the time I finished year 12, Sonia was diagnosed with metastatic breast cancer, an unforgiving form of cancer with a slim survival rate. Sonia was told that her time on this earth was limited, so she decided to live out her remaining years doing the things she loved, with the people she loved, travelling overseas, doing photography and arts and crafts. She believed there was no point in wasting her life doing things she didn’t enjoy. Despite her health condition, she remained positive and was able to live out her remaining days happily and carefree, which in turn gave me so much motivation to not give up and to keep living my life, no matter how poor my physical condition becomes.

Although my condition is ever deteriorating, I still try to actively do things I enjoy such as attending concerts and music festivals (with the assistance of a wheelchair and a good friend), being involved at the local football club, and going on trips with my dad. I try to focus on the here and the now, not to mourn my past physical capabilities, and not to ponder future deterioration. Living with FSHD may be very difficult at times, however I am extremely fortunate to be able to still live a happy life.

I play with the cards I am dealt, and will continue to do so into the future.

Shaun Jones, 23.

Jodie‘s Story

I was born and grew up in Bristol, South West England, with my parents and younger brother. As a child I enjoyed gymnastics, trampolining, horseriding, swimming and majorettes. I remember doing handstands and cartwheels on the school field with my friends one day aged around 10/11 and my arms collapsed under me when I did a handstand. I didn‘t really think anything of it at the time, but I semi-consciously decided to just stop doing handstands. Looking back, this is probably the first sign of FSHD that I can remember, aside from my slightly winging shoulder blades (put down to the fact I was a skinny child) and my inability to whistle or wink, which in hindsight we now know are symptoms of the condition.

I was diagnosed with FSHD aged 12, after my Majorette leader noticed I couldn‘t hold my arms up in the air for a move I needed to do for our routine. He told my parents when they picked me up that night, and we went through 6 months of blood tests, strength/balance tests, nerve conduction tests and finally a muscle biopsy from my left thigh. I‘m the first and only mutation of FSHD in my family.

My first question to the Doctor when they told my I had FSHD was “can I still ride horses?”. The answer was yes, athough it wouldn‘t have made any difference if they said no – I wasn‘t going to let this stop me from doing something I love. I‘m proud to say I‘ve kept that attitude throughout my life!

I was relatively unaffected through my school years, with the main issue I had being unable to run. After I was diagnosed, I remember having to do a running test during sport at senior school one day, and I fell over twice. My PE teacher pulled me out of the test without making any fuss, and from then on, quietly kept me out of any running tests or similar activities for the rest of my school years.

I was lucky to have a very supportive school, as well as good friends who didn‘t make a big deal about me having FSHD. I‘m lucky that I had a relatively normal school life, and passed with good grades, went through college and then university to graduate in new media production. I wanted to be a journalist, magazine editor or a TV production crew member when I was growing up. After finishing University, I emigrated to New Zealand with my boyfriend (now husband) and started a web design and development company called Wicked Eye. I‘m pleased that I ended up working in a similar creative industry that I wanted to be in from a young age.

I noticed my first deteriation in mobility after I started driving aged 17 – probably because I was walking a lot less with my new found driving freedom! I started finding it more difficult to climb stairs and to get up from sitting on the floor, although I managed to find a way to do both for a while. FSHD is all about adapting to the new challenges and weaknesses that get thrown at you, and finding ways around them for as long as you can.

My balance started to get quite affected in my late 20‘s and I started walking with a stick. Then I “gave in” to using a manual wheelchair for outings when I was in my early 30‘s, and moved onto an electric wheelchair in the last few years. Using an electric wheelchair proved to be the opposite of the “confined” feeling of “giving up” that I thought it would be. It‘s actually quite empowering! I can now move around a lot quicker, much more safely, I can cover bigger distances and get to places I never could have done on my own two feet! The funniest moment in my wheelchair so far was during a trip to England a couple of years ago. We went to Dartmoor (in South West England) and wanted to go up one of the Tors as a family (a big hill with rocky outcrops and wild horses running around the place). I wasn‘t sure if my electric chair would make it, but decided to give it a go. I made it to the top which was awesome but coming down was a lot scarier as my wheelchair slipped and slid on

the steep bits, so my husband had to hang onto the back of it in some places to stop me taking off down the hill! The look on people‘s faces we passed was priceless!

Another time we went to the ski field with my “modified” manual chair they stopped the ski lift chairs so I could get on, and then one of the staff members took my manual chair down on his lap on the chair in front, and down we went to the nursery slopes. As we were coming down the lift our then 10-year-old son was throwing snowballs and me and Mum in the lift and again, the astonished look on people‘s faces that this child was throwing snowballs at a “helpless” disabled person was priceless! Mum and I were in hysterics! I think the main thing to focus on at any stage of mobility difficulties is not what you can‘t do, but what you can. Even if that means pushing your mobility equipment to (and sometimes over) it‘s limits!

My biggest passion and hobby in life in the last 11 years is horse riding. I started riding again at my local Riding for Disabled centre (RDA) when I was 27 after a 12 year break.

It was a lot different than I remembered, with my muscle weakness a lot worse than when I last rode a horse as a child. I worked hard through an 18-month RDA therapy programme to develop my riding skills again, and in 2010 I was ready to take the step back into para dressage competition.

FSHD means I can only ride at walk, and I need a team of helpers to help me look after, ride and compete my horse. Yes, I wish I didn‘t have FSHD and I wish i could catch, groom and tack up my own horse, ride on my own, trot and canter my horse, and compete at a higher level than I can, but on the other hand, if I didn‘t have FSHD and need all this help to do something I love, I wouldn‘t have met the amazing people that I have. I wouldn‘t have learned the training techniques that I use now, and I wouldn‘t have been given the fantastic opportunities that have come my way over the last few years, including being given the ride on the fabulous horse that I have in my paddock. I‘m hoping more opportunities will come my way in the futurte too, including competing overseas for NZ.

I‘m very passionate about promoting para dressage here in New Zealand and would love more people to get involved in the sport, both for the physical exercise side, as well as the social side of meeting new people, and being able to be competitive in a sport on a level playing field. Horses are amazing creatures, and being able to communicate with your horse using the most subtle queues, and adapt your training to suit your own abilities is something I still find so interesting and incredibly rewarding.

Looking to the future, I know that my mobility is going to decline and I will be faced with more challenges. Every day things like getting out of bed, showering, getting dressed and many other every day tasks will get harder or even impossible. I will continue to find ways to keep doing as much as I can myself, and will accept help when I need to (even though I like to be quite independent). I just know I need to keep doing as much as I can, while I still can, and get as much out of life as possible!

Once a treatment or cure is found, the first thing I would do is canter my horse down the beach, wind in my hair and the sea water flicking up in my face! It‘s been a dream of mine since I was 10 years old. I finally fulfilled part of that dream in 2015 when I walked my horse on the beach for the first time and it was amazing! I would love to take it one step further and get to canter through the waves one day so come on researchers – you‘re so close to a treatment!

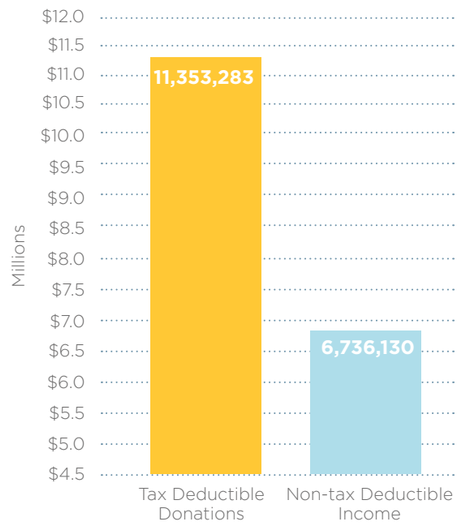
Jodie Thorne, 38

Our Finances

Where the money comes from

Since inception, we have raised over $18 million. As at June 30 2020, FSHD Global successfully raised over $11.3 million in tax deductible donations and over $6.7 million in net non-tax deductible income. This has been achievable because of the support of our community and the hard work of our lean, dedicated team.

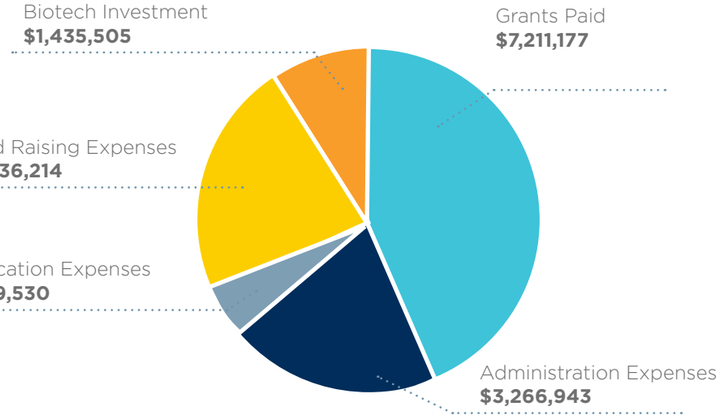
Total Income



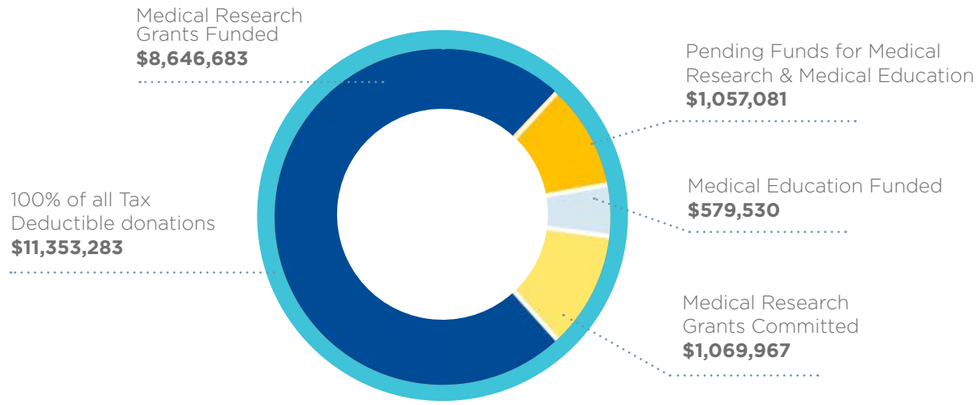
Where the money goes

FSHD Global funds world class medical research, education and investments, championing a cure for FSHD. We encourage collaboration in medical research, putting Australia in the middle of the global medical matrix of FSHD.

Total Expenditure



Allocation of Tax Deductible donations since 2007



100%

How does the Foundation fund its expenses

Traditionally, 100% of all cash tax deductible donations are allocated to current or future medical research investment, grants and educations. The Foundations operating expenses are covered by other non-tax deductible fundraising activities such as sponsorships, events, campaigns and auctions. As a result of COVID-19 and the cancellation of the 2020 Sydney Chocolate Ball, our operating model for the 2020 financial year sits at 90%.

Statement of Profit or (Loss) and Other Comprehensive Income

For the year ended 30 June 2020

This statement should be read in conjunction with the notes to the financial statements.

	2020	2019
Donations	$606,846	$757,448
Donations in Kind		$9,000
Other Fundraising Income	$104,351	$644,180
Government Subsidy	$34,563	
Other income	$41,913	$58,046
	$787,673	$1,468,674
Grants made	(552,518)	(688,911)
Fundraising expense	(29,464)	(377,478)
Education programs	(40,607)	(17,369)
Employee expense	(369,725)	(319,584)
Other expenses	(21,710)	(54,810)
(Loss)/Surplus for the year	**(258,250)**	**10,522**
Total comprehensive income/(loss) for the year	(258,250)	10,522

Statement of Financial Position

As at 30 June 2020

This statement should be read in conjunctiotn with the notes to the financial statements.

ASSETS	2020	2019
CURRENT		
Cash and cash equivalents	928,252	914,529
Trade and other receivables	120,058	18,981
Financial assets	1,056,890	1,754,493
Other assets	-	1,952
Total Current assets	2,105,200	2,689,955
NON-CURRENT		
Investments	1,435,505	1,110,033
Property, plant and equipment	2,986	4,910
Total Non-current assets	1,438,491	1,114,943
Total assets	3,543,690	3,804,898
LIABILITIES		
CURRENT		
Trade and other payables	21,325	22,003
Provisions	10,202	12,482
Total Current liabilities	31,527	34,485
Total liabilities	31,527	34,485
Net assets	3,512,164	3,770,413
EQUITY		
Retained earnings	3,512,164	3,770,413
TOTAL EQUITY	3,512,164	3,770,413

How You Can Help!

Volunteer
Volunteer your time and skills to the Foundation. Whether it be through our internships, events or advisory boards - any help is hugely appreciated.

Workplace giving
Commit to supporting our Foundation by donating as little as $2 each month. Simply include FSHD Global as one of your favourite charities for workplace giving. Workplace giving is an easy way for employees to contribute a small portion of their pre-tax salary to charity.

Matching
Rally together some colleagues to participate in corporate giving. Then double your company's social impact by matching their donations!

Donation Boxes
Every dollar counts, and it doesn't always have to be from your own pocket. You can help raise funds by placing a donation box in your local cafe, workplace kitchen or business place. Donation boxes are an easy way to generate awareness within your community.

End of Financial Year Donation
Donate a one-off amount to go towards finding a cure for FSHD. You can elect the particular grant and area of research you wish to support.

Boardroom luncheons
Let us liven up your boardroom! FSHD Global provides engaging and prominent speakers from our networks of scientists, business leaders and people living with FSHD to speak on topics such as the latest FSHD research, philanthropy and the gift of giving. You put on the lunch and we put on the show.

Invoice rounding
Consider appointing FSHD Global as your preferred charity for invoice rounding. When issuing invoices to your clients simply round up the amount and donate the difference to FSHD Global. This small gesture goes a long way in helping us advance treatments and finding a cure for FSHD.

Corporate partnerships
Become a Corporate Partner of our Foundation and be involved in all events throughout the entire year. Let us connect you to pioneers of industry to create prosperous relationships for all parties.

Create your own fundraiser
Host your own fundraising event and raise money on behalf of the Foundation. Whether it be a Christmas party, birthday, ladies lunch, comedy night or dinner, we encourage and appreciate all fundraising activities - no matter how small. We can provide volunteers, collateral and amazing prizes so all you need to do is send out invites.

FSHD Global
A multi – award winning Charity

2013 — 2013 WINNER OUTSTANDING ACHIEVEMENT — FSHD GLOBAL RESEARCH FOUNDATION

2014 — THE AUSTRALIAN CHARITY AWARDS OUTSTANDING ACHIEVEMENT 2014; 2014 AUSTRALIAN SERVICE INNOVATION AWARDS

2015

2016 — THE AUSTRALIAN CHARITY AWARDS OUTSTANDING ACHIEVEMENT WINNER 2016

2017 — THE AUSTRALIAN CHARITY AWARDS CHARITY OF THE YEAR WINNER 2017

2018 — THE AUSTRALIAN CHARITY AWARDS OUTSTANDING ACHIEVEMENT WINNER 2018

2019 — THE AUSTRALIAN CHARITY AWARDS OAA OUTSTANDING ACHIEVEMENT WINNER 2019

2020 — THE AUSTRALIAN CHARITY AWARDS OAA OUTSTANDING ACHIEVEMENT WINNER 2020

FSHD Global is a little organisation doing very big things!

FSHD Global has established an FSHD Medical Research & Clinical Trial Readiness Program

Within 12 years we have funded 50 successful medical research grants across 10 countries

The Foundation receives no government funding, we rely on charitable donations

We successfully generated a world first FSHD embryonic stem cell line fast tracking global research

The Board and its Scientific Advisors receive no remuneration, volunteering their expertise to the cause

Aimed at empowering awareness and clinical care we developed treatment guidelines and toolkits for patients, GP's and Allied Health groups

The Foundation supports innovative and socially responsible biotech's to fast track therapies and clinical trials

The Foundation was honored to be named The Australian Charity of the Year, in the 2017 Business Awards.

We are committed to bring clinical trials to Australians affected with FSHD

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Thank you

FSHD Global Research Foundation Ltd

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